**Final Project Proposal: Store Sales Dataset Analysis**

**📝 Project Description:**

This project focuses on helping businesses that sell **collectible model vehicles** (such as classic cars, motorcycles, planes, trains, and more) to **analyze the performance,** Using data exported from company DB, We cleaned, processed, and visualized performance data in a way that's **easy to understand** and **actionable** for non-technical users.

The goal is to provide our business with insights into which product lines perform best, how much they are spending vs. earning, and how their pricing compares to MSRP. The final output includes dashboards, charts, and key metrics to support better marketing decisions and ad optimization.

**🚀 Key Features:**

* Automated data cleaning and preprocessing
* Analysis of revenue, product performance, and pricing
* Visual dashboards for ad and product performance
* Tailored insights for sellers, not end consumers

**Group Members & Roles**

* **Team Leader:** Ali Khalaf Abdalstaar
* **Data Cleaning & Preprocessing:** Rawan (using Python)
* **Data Extraction:** Ahmed (using SQL)
* **Data Analysis & Insights:** Riham
* **Modeling:** Taha
* **Visualization & Dashboard Development:** Ahmed (using Power BI)

**Objectives**

1. Clean and preprocess the dataset to ensure data quality.
2. Identify key analytical questions to extract business insights.
3. Develop an interactive dashboard for data visualization.
4. Deliver a final report summarizing findings and recommendations.

**🧰 Tools & Technologies Used in the Data Analysis Project**

**🔹 1. SQL**

* **Purpose: Data extraction and filtering.**
* **Use Case: Used to retrieve relevant datasets and apply initial filtering conditions before analysis.**

**🔹 Python**

* **Libraries:**
  + **pandas – For data cleaning, transformation, and manipulation.**
  + **Matplotlib & Seaborn – For generating exploratory visualizations and charts.**
* **Use Case: All core data processing and statistical analysis were done using Python to uncover insights, trends, and patterns in the dataset.**

**🔹 Tableau**

* **Purpose: Dashboard creation and visualization.**
* **Use Case: Built an interactive dashboard to present key business metrics (e.g., revenue by product line, best-selling products, average order value) in a clear and visual format for decision-makers.**

**🔹 Jupyter Notebook (via Kaggle)**

* **Purpose: Code development, documentation, and analysis reporting.**
* **Use Case: Used to combine Python code, results, and explanations in one place for a clear, well-documented workflow.**

**Milestones& Deadlines**

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| --- | --- | --- | --- |
| Week | Milestone | Tasks | Deliverables |
| Week 1 | Data Cleaning & Preprocessing | Build data model, clean, and preprocess data | Cleaned dataset, preprocessing notebook |
| Week 2 | Analysis Questions Phase | Identify business-relevant questions | List of analysis questions |
| Week 3 | Forecasting Phase | Apply models to forecast trends | Forecasting visualizations |
| Week 4 | Visualization & Final Presentation | Build Tableau dashboard, prepare final report | Interactive dashboard, final report & presentation |

**✅ 1. Data Cleaning & Processing**

**Objective: Prepare the raw dataset for analysis by ensuring data quality and structure.**

**Tasks & Goals:**

* **🧹 Data Cleaning:**
  + **Handle missing values, duplicates, and formatting issues.**
  + **Ensure consistency in column names, data types, and units (e.g., dates, currency).**
* **📊 Data Structuring:**
  + **Convert raw data into a well-organized format suitable for analysis (e.g., cleaned DataFrame).**
  + **Merge, split, or reshape datasets as needed for downstream analysis.**
* **🕒 Timely Completion:**
  + **Complete this phase within the project timeline to avoid delays in analysis or modeling.**
* **📑 Documentation:**
  + **Clearly document all steps in a reproducible format (e.g., in notebook markdown or a README).**
  + **Log assumptions made during data cleaning (e.g., handling of outliers or imputations).**

**✅ 2. Analysis & Insights**

**Objective: Extract meaningful, business-relevant insights from the data.**

**Tasks & Goals:**

* **❓ Business Questions:**
  + **Identify and prioritize key analytical questions (e.g., What is the best-selling product? Which product line drives the most revenue?).**
* **📈 Exploratory Data Analysis (EDA):**
  + **Use descriptive statistics and visualizations (histograms, bar charts, boxplots, etc.) to explore data patterns.**
* **🔍 Insight Generation:**
  + **Provide clear and concise insights that relate directly to business performance (e.g., top-performing categories, pricing effectiveness).**
  + **Interpret findings from a business perspective, not just a technical one.**
* **📉 Actionable Takeaways:**
  + **Deliver insights that can help improve product focus, marketing strategies, or pricing decisions.**

**✅ 3. Visualization & Reporting**

**Objective: Create user-friendly visual tools to communicate findings and track performance.**

**Tasks & Goals:**

* **🖼️ Interactive Dashboards:**
  + **Build a dashboard using tools like Tableau, Power BI, or Plotly Dash that allows users to explore key metrics.**
  + **Include filters (e.g., by product line, date, region) and interactive charts.**
* **⚙️ Performance & Usability:**
  + **Ensure the dashboard loads quickly and is easy to navigate for non-technical users.**
  + **Test with sample users (if possible) to validate usability.**
* **📌 Core Metrics Displayed:**
  + **Revenue by product line**
  + **Best/worst performing products**
  + **Price vs. MSRP**
  + **Forecasted sales or demand trends**

**✅ 5. Final Documentation & Presentation**

**Objective: Deliver a complete and professional final product with clear recommendations.**

**Tasks & Goals:**

* **📘 Final Report:**
  + **Include sections like project overview, methodology, results, and conclusions.**
  + **Present insights in a business-friendly language, supported by visuals.**
* **📊 Presentation:**
  + **Create a summary slide deck (e.g., PowerPoint) highlighting key findings, visualizations, and recommendations.**
* **🎯 Actionable Recommendations:**
  + **Suggest next steps based on your findings (e.g., invest more in classic car ads, reduce discounts on certain items, change pricing strategies).**
  + **Back each recommendation with data evidence.**